

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER 1661.1001  <b>10/070162</b>
<b>TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371</b>		
INTERNATIONAL APPLICATION NO. PCT/KR99/00505	INTERNATIONAL FILING DATE September 2, 1999	PRIORITY DATE CLAIMED NONE
TITLE OF INVENTION A DEVICE FOR RECORDING IMAGE OF DRIVING CIRCUMSTANCES AROUND AUTOMOBILE		
APPLICANT(S) FOR DO/EO/US Eung Do LEE et al.		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:		
<ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.</li> <li>2. <input checked="" type="checkbox"/> This is an express request to immediately begin national examination procedures (35 U.S.C. 371(f)).</li> <li>3. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (PCT Article 31).</li> <li>4. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))               <ol style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> has been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li>5. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).</li> <li>6. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))               <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> have been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li>7. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</li> <li>8. <input checked="" type="checkbox"/> An oath or declaration of the inventor (35 U.S.C. 371(c)(4)).</li> <li>9. <input type="checkbox"/> A translation of the Annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li> </ol>		
Items 10-15 below concern document(s) or information included:		
<ol style="list-style-type: none"> <li>10. <input checked="" type="checkbox"/> An Information Disclosure Statement Under 37 CFR 1.97 and 1.98.</li> <li>11. <input type="checkbox"/> An assignment document for recording.               <p style="margin-left: 20px;">Please mail the recorded assignment document to:</p> <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> the person whose signature, name &amp; address appears at the bottom of this document.</li> <li>b. <input type="checkbox"/> the following:</li> </ol> </li> <li>12. <input type="checkbox"/> A preliminary amendment.</li> <li>13. <input type="checkbox"/> A substitute specification</li> <li>14. <input type="checkbox"/> A change of power of attorney and/or address letter.</li> <li>15. <input checked="" type="checkbox"/> Other items or information:</li> </ol>		
PCT/IPEA/409, PCT/RO/101, PCT/ISA/210		

10/070162

JC19 Rec'd PCT/PTO 04 MAR 2002

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CLAIMS	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
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BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(4): <input checked="" type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO .....\$1,040 <input type="checkbox"/> International preliminary examination fee (37 C.F.R. 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO.....\$ 890 <input type="checkbox"/> International preliminary examination fee (37 C.F.R. 1.482) not paid to USPTO but international search fee (37 C.F.R. 1.445(a)(2)) paid to USPTO...\$ 740 <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provision of PCT Article 33(1)-(4).....\$ 710 <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2) to (4) .....\$ 100					\$1040.00
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TOTAL OF ABOVE CALCULATIONS					\$1040.00
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SUBTOTAL					\$520.00
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TOTAL NATIONAL FEE					\$520.00
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PATENT TRADEMARK OFFICE

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Signature		Date	March 4, 2002

S&amp;H Form: (2/01)

PATENT

Attorney's Docket No. 1661.1001

Applicant or Patentee: Eung Do LEE  
 Serial or Patent No.: \_\_\_\_\_  
 Confirmation No.: \_\_\_\_\_  
 Filed or Issued: \_\_\_\_\_  
 For: A DEVICE FOR RECORDING IMAGE OF DRIVING  
CIRCUMSTANCES AROUND AUTOMOBILE

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY  
 STATUS (37 C.F.R. 1.27(a) – INDEPENDENT INVENTOR 1.27(a)(1))**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 C.F.R. 1.27(a)(1) for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled A DEVICE FOR RECORDING IMAGE OF DRIVING CIRCUMSTANCES AROUND AUTOMOBILE described in

- ☐ the specification filed herewith.  
☐ application serial no. Unassigned confirmation no. , filed  
☐ patent no. , issued

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 C.F.R. 1.27(a)(1) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 C.F.R. 1.27(a)(2) or a nonprofit organization under 37 C.F.R. 1.27(a)(3).

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. 1.27(g)).

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

EUNG DO LEE  
EUNG DO LEE

**Signature of Inventor**

February 27, 2002

(only one needed per 37 C.F.R. 27(c)(2))

11-6000

**A DEVICE FOR RECORDING IMAGE OF DRIVING**  
**CIRCUMSTANCES AROUND AUTOMOBILE**

5

**Technical Field**

10020463-030402  
10 The present invention relates to a device mounted  
to an automobile for automatically recording circumstances  
around the automobile as images with sounds, and more  
particularly, the present invention relates to a device  
for recording an image of driving circumstances around an  
automobile, wherein cameras for obtaining images are  
mounted to the automobile, image information obtained by  
the cameras is converted into digital signals and then  
stored to a recording medium, and the recorded image  
15 information can be decoded to be displayed on a monitor or  
the recording medium can be disconnected from the device  
to allow images to be reproduced using a separate image  
reproducing unit.

20

**Background Art**

Generally, when an automobile is running, stopped  
or parked, driving circumstances around one's own  
automobile is unpredictably changed. If an accident  
occurs among one's own automobile, another automobile and  
25 walkers while the automobiles are running, it is necessary

to secure a convincing evidence having objectivity which is to be used for judging a fault among the parties concerned, and this is considered as a very important factor not only to a driver oneself, but also to a driver of another automobile and walkers.

However, in actual fact, it is very difficult to secure a convincing evidence having objectivity for a situation of an accident, which occurs when one's own automobile is running, stopped or parked. At the most, judgement of a fault among parties concerned is made mainly on the basis of assertions of the concerned parties, a record of the accident written by a traffic policeman, photographs taken after the accident occurs, etc. Moreover, actually, it is difficult to secure a witness and convincing verbal evidence from the witness.

Also, while wicked actions which cause damages such as puncture of a tire or scratch on a body, to automobiles are substantially being done, when an offending automobile or an offender fled, even if it is possible to catch the offending automobile or seize the offender on a later day, because it is difficult to secure a concrete evidence, it is impossible to receive lawful compensation.

On the other hand, as means for considering driving circumstances of an automobile and obtaining information

related to the driving circumstances of the automobile, a tachograph is disclosed in the art.

However, because information such as speed of one's own automobile, angle of a steering wheel, running time of the automobile, etc. at the time when an accident occurs, is recorded to the tachograph, information for a minor collision, an accident at a pedestrian crossing, a signal violation, a knock down and run away accident, etc. which may occur while driving the automobile in complex and various road driving circumstances, cannot be properly provided.

On the other hand, a device in which a sensor is installed rearward of an automobile for overcoming a problem due to blind areas so that an alarm is rendered when the sensor senses a human body or an obstacle positioned rearward of the automobile, a device in which a camera capable of imaging blind areas of an automobile is installed to a proper position so that images for the blind areas obtained by the camera are displayed on a monitor located in the vicinity of a driver seat, etc. are disclosed in the art. However, the devices simply function as auxiliary means used in driving an automobile, and it is impossible for the devices to record and reproduce driving circumstances around the automobile to and from a recording medium as image information.

### Disclosure of Invention

According to one aspect of the present invention, there is provided a device for recording an image of driving circumstances around an automobile, wherein small-sized cameras are mounted to the automobile for obtaining image information for the front side and the rear side of the automobile as monochrome or color image information, the image information obtained by the cameras is recorded in real time to a recording medium after being converted to digital signals, and the recorded image signals are capable of being reproduced to be displayed on displaying means.

According to another aspect of the present invention, there is provided a device for recording an image of driving circumstances around an automobile, wherein cameras are mounted to center portions of front and rear windshield glasses of the automobile for obtaining image information for the front side and the rear side of the automobile, the image information obtained by the cameras is recorded as capture images in real time and with a predetermined time interval to a recording medium after being converted to digital signals, and the recorded image signals are capable of being reproduced to be displayed on displaying means.



According to still another aspect of the present invention, there is provided a device for recording an image of driving circumstances around an automobile, wherein cameras for obtaining image information for the front side and the rear side of the automobile and means for sensing impact applied from the outside are mounted to the automobile; auxiliary power supply means supplements a battery power supply of the automobile itself while being automatically switched; when impact is applied to the automobile from the outside and damage is caused in a power supplying path of the automobile itself, a power source is automatically switched from the battery power supply to the auxiliary power supply means, and at the same time, images obtained by the cameras are converted into digital signals to be continuously recorded for a predetermined time in real time to a recording medium; and the recorded image signals are capable of being reproduced to be displayed on a display.

According to yet still another aspect of the present invention, there is provided a device for recording an image of driving circumstances around an automobile, wherein sound information is obtained, simultaneously with an image recording, by microphones installed inside and outside the automobile, whereby it is possible to record and reproduce a situation of an

accident occurring during running, parking or stopping, in a more realistic manner together with images.

### **Brief Description of Drawings**

5           The above objects, and other features and advantages of the present invention will become more apparent after a reading of the following detailed description when taken in conjunction with the drawings, in which:

10           FIGs. 1A and 1B are plan views illustrating installation positions of cameras when a device for recording an image of driving circumstances is mounted to an automobile, wherein FIG. 1A depicts a state in which a pair of cameras are installed to be opposed to each other and FIG. 1B depicts another state in which a pair of  
15           cameras are installed to face each other;

          FIG. 2 is a block diagram of the device for recording an image of driving circumstances around an automobile; and

20           FIG. 3 is a flow chart for explaining recording/reproducing procedures of an image of driving circumstances around an automobile, which are implemented in accordance with the present invention.

25

### Best Mode for Carrying Out the Invention

Reference will now be made in greater detail to a preferred embodiment of the invention, an example of which is illustrated in the accompanying drawings. Wherever possible, the same reference numerals will be used throughout the drawings and the description to refer to the same or like parts.

Hereinafter, a construction and working effects of a device for recording an image of driving circumstances around an automobile in accordance with an embodiment of the present invention will be described in detail with reference to FIGs. 1A through 3.

FIG. 1A is a plan view illustrating installation positions of cameras in an automobile to which a device for recording an image of driving circumstances around an automobile of the present invention is mounted.

A front first camera 101 is directed toward the front of an automobile 100 and is attached to an inner upper end of a front windshield glass. An angle  $\alpha 1$  through which the first camera 101 can image driving circumstances around the automobile can be properly enlarged using a wide-angle lens, a fisheye lens, etc. Image information for a front portion and front left and right portions of the automobile 100 is obtained by the front first camera 101.

A rear second camera 102 is directed toward the rear of the automobile 100 and is attached to an inner upper end of a rear windshield glass. An angle  $\alpha_2$  through which the second camera 102 can image driving  
5 circumstances around the automobile can be properly enlarged using a wide-angle lens, a fisheye lens, etc. Image information for a rear portion and rear left and right portions of the automobile 100 is obtained by the rear second camera 102.

10 Small-sized charge-coupled devices (CCDs) can be used as the cameras, and, if desired, separate cameras can be additionally installed for left and right side portions of the automobile 100.

Also, according to the present invention, cameras  
15 having microphones provided therein can be installed, whereby images and sounds around the automobile 100 can be simultaneously obtained. In addition, other microphones can be installed inside the automobile 100, whereby, when an accident occurs, a situation inside the automobile 100  
20 can be recorded as sounds together with images. Since a procedure for applying a technique of obtaining, recording and reproducing sound information to the present invention as described above, can be embodied by persons skilled in the art in a sufficient and easy manner, detailed  
25 descriptions for the procedure will be omitted.

On the other hand, as shown in FIG. 1B, the first camera 101 can be installed such that it is directed from the front toward the rear of the automobile 100, and the second camera 102 can be installed such that it is directed from the rear toward the front of the automobile 100. In other words, by installing the first and second cameras 101 and 102 such that their imaging angles are crossed with each other at points which are separated from a body of the automobile 100 by a distance  $d$ , operating ranges of the cameras 101 and 102 can be preferably enlarged. In this case, the cameras 101 and 102 can operate such that they securely remove blind areas at the left and right side portions of the automobile 100.

FIG. 2 shows a block diagram of the device for recording an image of driving circumstances around an automobile according to the present invention, the device including an image reproducing device 200.

As shown in FIG. 2, the device of the present invention includes the first and second cameras 101 and 102 which are mounted to the automobile 100 in proper directions for obtaining image information around the automobile 100, a screen-two-divisional processing section 103 for two-divisionally and simultaneously recording and reproducing image information obtained by the first and second cameras 101 and 102 on a screen, an encoder section

104 for processing the image information outputted from  
the screen-two-divisional processing section 103 to image  
signals having a suitable format and for converting the  
image signals to digital signals, an image recording  
5 medium 105 for storing the digital image signals converted  
by the encoder section 104, a recording time interval  
establishing section 106 for establishing a recording time  
interval of the image signals which are recorded to the  
image recording medium 105, a main power supply section  
10 107 of the automobile 100 itself and an auxiliary power  
supply section 108, an impact sensor section 109 for  
sensing physical impact applied to the automobile 100, a  
power source switching section 110 for supplying power  
from the main power supply section 107 of the automobile  
15 100 itself in an ordinary time and for supplying power  
from the auxiliary power supply section 108 when impact is  
sensed by the impact sensor section 109, and a forced-  
driving time establishing section 111 for establishing a  
power supplying time by the power source switching section  
20 110 thereby establishing a time during which the image  
recording device is forcibly operated when impact is  
sensed by the impact sensor section 109.

Further, as described above, the device according  
to the present invention includes the image reproducing  
25 device 200. The image reproducing device 200 has a

decoder section 201 for reproducing the digital image signals which are recorded to the image recording medium 105 and a display section 202 for displaying on a monitor the image signals which are reproduced by the decoder section 201.

Due to the fact that the image reproducing device 200 is constructed together with the image recording device, it is possible to immediately reproduce recorded images and to display the reproduced image signals on the monitor. However, it is also possible to provide the image reproducing device 200 as a separate element and to implement only an image recording operation.

On the other hand, the image recording medium 105 as being a medium which can store digital image signals is constituted by a large scale hard disk drive (HDD), a flash memory, a re-writable CD-ROM, etc. Further, the image recording medium 105 can be realized such that it can be connected to and disconnected from the image recording device via a component such as a connector, a communication port or the like.

In addition, the image recording medium 105 can be constituted by a VCR. In this case, an analog/digital conversion processing by the encoder section 104 is not required, and recorded signals can be reproduced using a conventional analog VCR as it is.

Hereinafter, operations of the device for recording  
an image of driving circumstances around an automobile  
according to the present invention, constructed as  
mentioned above, will be described in detail with  
5 reference to the block diagram of FIG. 2 and the flowchart  
of FIG. 3.

In an ordinary time, the power source switching  
section 110 supplies power for operating the device from  
the main power supply section 107 of the automobile 100  
10 itself. The main power supply section 107 is a battery of  
the automobile 100 itself.

If the power is supplied to the device, operations  
of the first and second cameras 101 and 102 are initiated  
at step 301. Then, at step 302, images of the front and  
15 rear portions and side portions of the automobile 100,  
which are obtained by the first and second cameras 101 and  
102, are processed on the left and right or upper and  
lower two-divisional screen by the screen-two-divisional  
processing section 103, and the processed image signals  
20 are converted into digital signals by the encoder section  
104.

The screen-two-divisional processing as described  
above is implemented so that the images obtained by the  
first and second cameras 101 and 102 are simultaneously  
25 monitored on one screen.



5 The first and second cameras 101 and 102 can be constituted by CCDs which can obtain monochrome or color images. In case that color images are obtained, information for a type and a color of an offending automobile and facial features and clothes of an offender can be precisely secured.

10 If desired, separate cameras can be additionally installed for obtaining images for left and right side portions of the automobile 100. For example, in the case that four cameras are used, a screen-four-divisional processing in which four camera images are simultaneously displayed on one screen, is implemented.

15 The encoder section 104 functions not only to convert the obtained image signals to digital signals, but also to process (encode) the obtained image signals to have a proper signal format. For example, the encoder section 104 constructs digital image signals having a signal format which corresponds to NTSC standards.

20 The digital image signals are recorded to the image recording medium 105.

25 At this time, at step 303, a judgment for determining whether or not impact is sensed by the impact sensor section 109 is performed. Impact sensors are installed at proper positions along a lengthwise direction and/or a widthwise direction of the automobile 100, to

output a corresponding impact sensing signal when a minor collision or a crash occurs.

5 In the case that impact is applied to the automobile from the outside, power supply from the main power supply section 107 of the automobile 100 which is the battery of the automobile 100 itself, to the device, can be cut. Therefore, in this case, as in step 304, a power source switching operation is implemented by the power source switching section 110, whereby power is  
10 supplied from the auxiliary power supply section 108 to the device.

At this time, as in step 305, power is continuously supplied to the device from the auxiliary power supply section 108 for a forced-driving time, for example, for 15  
15 minutes, which is established by the forced-driving time establishing section 111, whereby it is possible to obtain/record image information for driving circumstances around the automobile 100, not only immediately before a minor collision or a crash occurs, but also for a  
20 predetermined time after the minor collision or the crash occurs.

Then, at step 306, a judgement for determining whether or not a recording time interval is to be adjusted, is performed. If it is determined at step 306  
25 that a recording time interval is to be adjusted, a

program proceeds to step 307 where a recording time interval is adjusted and established by the recording time interval establishing section 106, and thereafter, at step 308, an image recording operation is implemented for the established recording time interval.

For example, while the automobile 100 is running, the image recording operation is continuously implemented, and while the automobile 100 is being parked or stopped, images for the driving circumstances around the automobile 100 are recorded in the form of capture images with a predetermined time interval in view of recording capacity (recording time) of the image recording medium 105.

By performing step 308, image information for driving circumstances around the automobile 100 is recorded to the image recording medium 105 as digital information.

The digital information is stored to the image recording medium 105 after being compacted using a proper compaction program, whereby it is possible to cope with a limitation in recording time due to a limitation in recording capacity of the image recording medium 105.

The image signals recorded to the image recording medium 105 can be reproduced by the image reproducing device 200 mounted to the automobile 100 or by a separate reproducing device.

In the case that the image reproducing device 200 is mounted to the automobile 100, if it is determined at step 309 that images are to be reproduced (corresponding to instructions such as a reproduction key input by a user), the decoder section 201 implements a decoding operation which is a reverse process to the encoding operation and then implements a digital/analog conversion operation, thereby to reproduce digital image information. The image information reproduced by the decoder section 201 is displayed on the display section 202, as in step 311.

The display section 202 can be constituted by a VDT, an LCD, etc. In the case that the conversion operation by the encoder 104 is implemented to have an NTSC format, composite image signals are constructed using the NTSC format and then outputted, and the images obtained by the two first and second cameras 101 and 102 and screen-two-divisionally processed are displayed on one display section 202.

In the case that the image reproducing device is provided as a separate element, the image recording medium 105 is disconnected from the connector, the communication port or the like, and then, the image recording medium 105 is connected to the image reproducing device using a

connector, a communication port or the like, thereby to enable signal encoding and displaying.

In the case that the image reproducing device 200 is constituted by a PC having a capture board, it is possible to store images to be displayed in the form of a file after implementing a capture process and to print the images.

The device for recording an image of driving circumstances around an automobile as shown in FIGs. 1A through 3, of the present invention, represents a preferred embodiment of the present invention. By the present invention, a situation of an accident can be reproduced in a more realistic manner in that sound information obtained by microphones installed inside and outside the automobile can be recorded and reproduced together with the image information.

As described above, by the device for recording an image of driving circumstances around an automobile according to the present invention, advantages are provided in that since a real-time recording of images and sounds around the automobile is accomplished during running, parking or stopping, a situational evidence of a minor collision, a crash, etc. which occur in association with an automobile can be secured as image and sound information.

Further, in the device for recording an image of driving circumstances around an automobile according to the present invention, even if a battery power supply of the automobile is shut off due to the occurrence of an  
5 accident, because power is continuously supplied from an auxiliary power supply section to ensure continuity of an image recording operation, a situational evidence of the accident can be secured.

Moreover, in the device for recording an image of  
10 driving circumstances around an automobile according to the present invention, since images around the automobile can be recorded for many hours in the form of a capture image when the automobile is parked or stopped, a function of preventing a crime against the automobile is  
15 simultaneously achieved, whereby information such as not only a type of an offending automobile, but also a color and a license number of the offending automobile, facial features and clothes of an offender, etc. can be precisely secured as highly reliable information while not depending  
20 upon a witness.

In the drawings and specification, there have been disclosed typical preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for

purposes of limitation, the scope of the invention being set forth in the following claims.

**WHAT IS CLAIMED IS:**

1. A device for recording an image of driving circumstances around an automobile, the device comprising:

5 a plurality of cameras mounted to the automobile for obtaining in real time the driving circumstances around the automobile as image information;

10 image signal processing means for processing the image information obtained by the plurality of cameras to a format which is suitable for recording and reproducing; and

15 image recording means for storing in real time the image signals processed by the image signal processing means.

2. The device as claimed in claim 1, wherein the device has at least two cameras; and the device further comprises screen-divisional processing means for divisionally recording and reproducing image information  
20 obtained by the at least two cameras, on a screen.

3. The device as claimed in claim 1, further comprising:



recording time interval adjusting means for  
adjusting a recording time interval of an image signal  
which is recorded to the image recording means.

5           4.     The device as claimed in claim 1, further  
comprising:

impact sensing means for sensing impact applied to  
the automobile from the outside;

10           an auxiliary power supply section for supplying  
power when impact is sensed by the impact sensing means;  
and

15           and means for switching a power source from a main  
power supply section of the automobile itself to the  
auxiliary power supply section when impact is sensed by  
the impact sensing means, thereby forcibly driving the  
device for a predetermined time.

5.     The device as claimed in claim 1, further  
comprising:

20           means for reproducing and displaying image signals  
recorded to the image recording means.

25           6.     The device as claimed in claim 1, wherein,  
among the plurality of cameras mounted to the automobile,  
a first camera is installed to be directed from the front

toward the rear of the automobile, and a second camera is installed to be directed from the rear toward the front of the automobile.

5           7.     The device as claimed in claim 1, wherein microphones are installed inside and outside the automobile, whereby it is possible to implement a sound recording operation as well as an image recording operation.

10

## ABSTRACT

Disclosed is a device for recording an image of driving circumstances around an automobile, the device comprising: a plurality of cameras mounted to the automobile for obtaining in real time the driving circumstances around the automobile as image information; an image signal processing section for processing the image information obtained by the plurality of cameras to a format which is suitable for recording and reproducing; and an image recording section for storing in real time the image signals processed by the image signal processing section.

FIG.1A

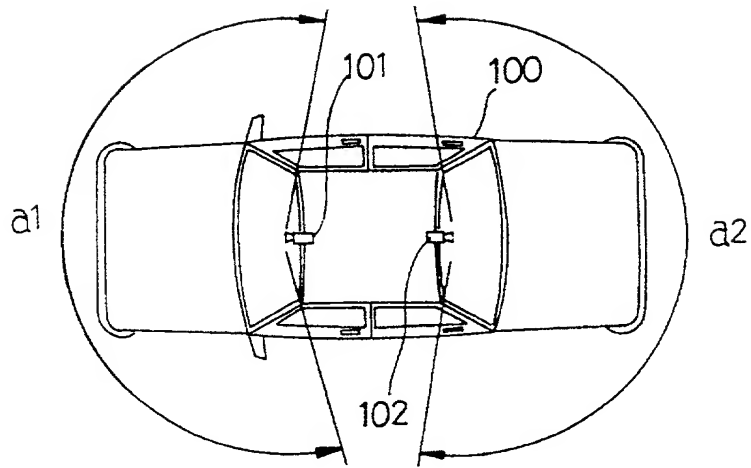


FIG.1B

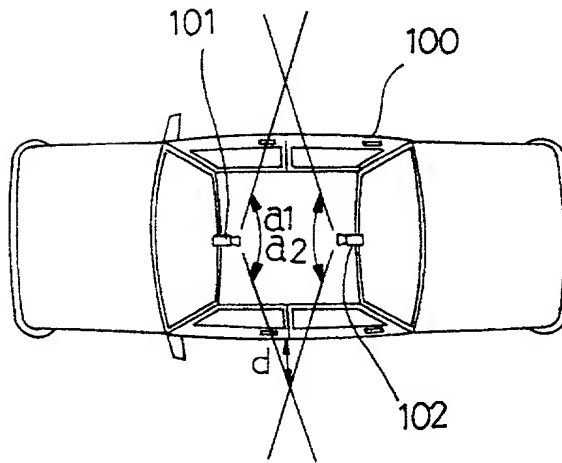


FIG. 2

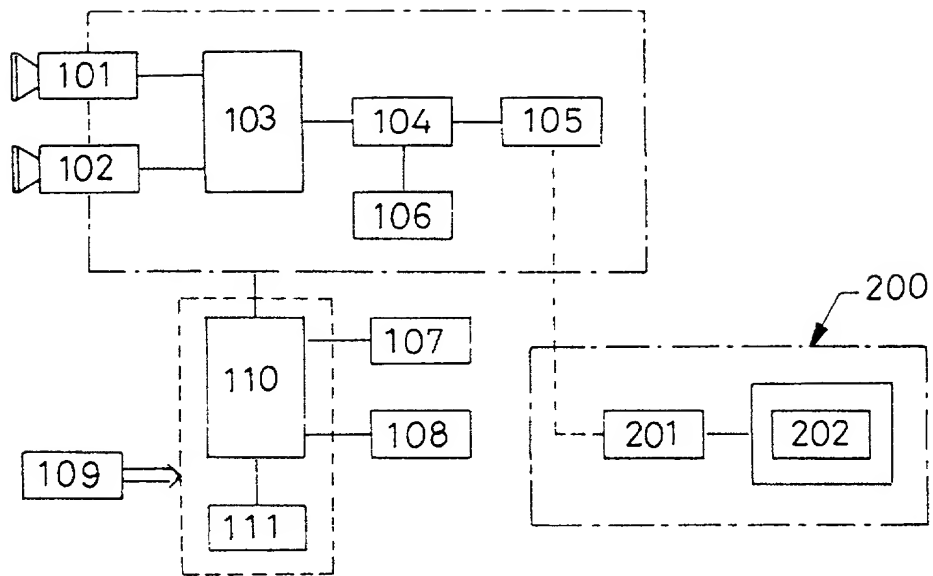
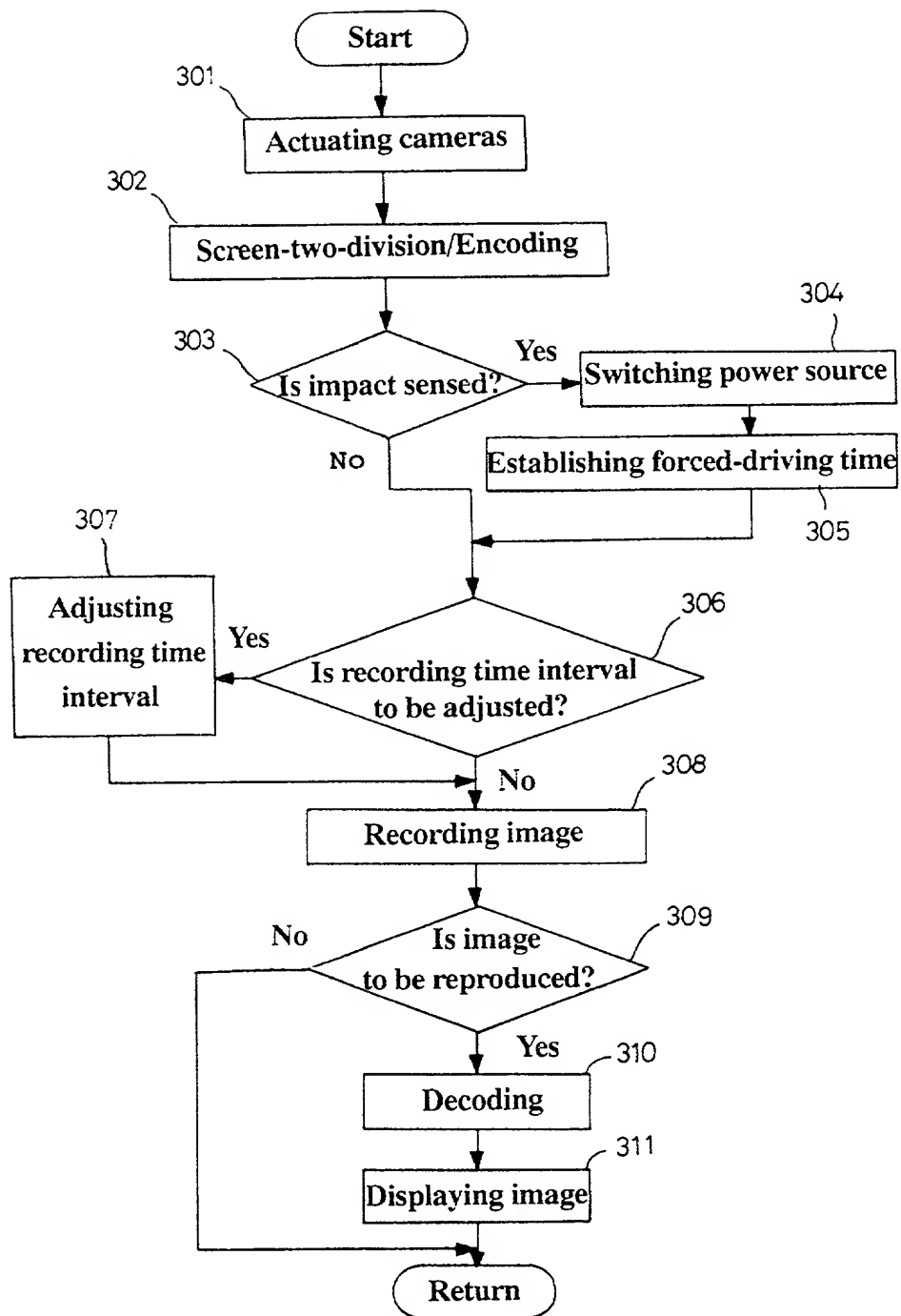


FIG.3



**COMBINED DECLARATION FOR PATENT APPLICATION AND POWER  
OF ATTORNEY**

(Includes Reference to PCT International Applications)

S&H Form: PTO 1391 (2/01)

ATTORNEY'S DOCKET NO.

1661.1001

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

A DEVICE FOR RECORDING IMAGE OF DRIVING CIRCUMSTANCES AROUND AUTOMOBILE ✓

the specification of which (check only one item below):

☒ [X] is attached hereto.

☐ [ ] was filed as United States application

Serial No.

on \_\_\_\_\_.

and was amended

on \_\_\_\_\_ (if applicable).

☒ [X] was filed as PCT international application

Number PCT/KR99/00505 ✓

on September 2, 1999. ✓

and was amended under PCT Article 19

on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the Office all information known to me to be material to patentability as defined in §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

**PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:**

COUNTRY (if PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
PCT ✓	PCT/KR99/00505 ✓	September 2, 1999 ✓	<input type="checkbox"/> [ ] YES <input checked="" type="checkbox"/> [X] NO
			<input type="checkbox"/> [ ] YES <input type="checkbox"/> [ ] NO
			<input type="checkbox"/> [ ] YES <input type="checkbox"/> [ ] NO
			<input type="checkbox"/> [ ] YES <input type="checkbox"/> [ ] NO
			<input type="checkbox"/> [ ] YES <input type="checkbox"/> [ ] NO


I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

**PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120:**

U.S. APPLICATIONS			STATUS (Check one)		
U.S. APPLICATION NUMBER	U.S. FILING DATE		PATENTED	PENDING	ABANDONED
PCT APPLICATIONS DESIGNATING THE U.S.					
PCT APPLICATION NO.	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED (if any)			
PCT/KR99/00505	09/02/99			X	



20020227

**POWER OF ATTORNEY:** I hereby appoint the attorneys and agents of Staas & Halsey LLP under USPTO Customer No. 21,171 to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

  
**21171**  
PATENT TRADEMARK OFFICE

1	FULL NAME OF INVENTOR	FAMILY NAME <u>LEE</u>	FIRST GIVEN NAME <u>Eung Do</u>	SECOND GIVEN NAME
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201 	SIGNATURE OF INVENTOR 202 	SIGNATURE OF INVENTOR 203
DATE February 27, 2002	DATE February 27, 2002	DATE